IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: John D. Hottovy et al.	§	Group Art Unit: 1713
Serial No.: 10/660,990	§	Examiner: Caixia Lu
Filed: September 13, 2003	§	
For: Loop Reactor Apparatus and Polymerization Processes with Multiple Feed Points for Olefins and Catalysts	§	Atty. Docket: CPCM:0023/FLE 210318US1

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37 C.F.R. 1.8

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June 24, 2005 — F. Clay Faries

Date — F. Clay Faries

Sir:

DECLARATION OF DONALD W. VERSER UNDER 37 C.F.R. § 1.131

I, Donald W. Verser, hereby declare as follows:

1. I am co-inventor of record of the invention disclosed and claimed in the above-referenced application.

2. My residence and business addresses are set forth below, along with my signature.

3. I, along with the co-inventors of record, conceived the subject matter disclosed and claimed in the above-referenced application prior to February 19, 2002. This conception is evidenced by two process flow diagrams prepared under my direction prior to February 19, 2002, and attached hereto as Exhibits A and B. For purposes of clarity, numerical labels have been added to these two diagrams. *See* Exhibits A and B. The

diagrams illustrate the process flow of a reactor system in a slurry polymerization process. *See id.* The diagrams depict a loop reactor 10 (labeled "R-301") and its associated feed piping and discharge piping. *See id.* These two diagrams illustrate embodiments of the claimed subject matter, including both the introduction of a catalyst 12 to the loop reactor 10 and the introduction of an olefin monomer 14 to the loop reactor 10 through two monomer feed points 16. *See* Exhibit A. The positions of the monomer feed points 16 are substantially symmetrical with respect to one another. *See id.* Further, in the illustrated loop reactor 12, olefin monomer is polymerized to form a fluid slurry 18 containing solid polyolefin particles. *See* Exhibit A. This fluid slurry 18 is circulated in the loop reactor 12, as depicted by the illustrated flow arrows. *See id.* An inline axial pump 20 which is labeled "P-303" facilitates circulation of the fluid slurry 18. *See id.* As depicted, a portion 22 of the fluid slurry 18 is withdrawn as an intermediate product 22 at slurry withdrawal locations 24 from the loop reactor 12. *See id.* The illustrated slurry withdrawal locations 24 are continuous takeoffs (CTO) and are positioned at pipe bends 26 of the loop reactor 12, such that the intermediate product 22 contains a higher concentration of the solid polyolefin particles than an average concentration of the solid polyolefin particles in the fluid slurry 18 in the loop reactor 12. *See* Exhibit A. In addition, "Note 10" (reference numeral 28) states that "sweep bends" are used for "CTO product lines" at the pipe bends 26, further indicating that the intermediate product 22 exits the loop reactor 10 having a solids concentration higher than the solids concentration of the fluid slurry 18 within the loop reactor 12. *See* Exhibits A and B. Further, in the illustrated embodiment, withdrawal locations 24 are spaced substantially symmetrical with respect to each other, as indicated by their depicted positions on different legs 30 of the loop reactor 10.

4. Work toward actual reduction to practice of the subject matter disclosed and claimed was diligently performed under my guidance from at least as early as February 18, 2002 to September 13, 2002. This work and the diligent performance of this work from at least as early as February 18, 2002 to September 13, 2002 are evidenced by Exhibits C, D, and E. For purposes of clarity, numerical labels have been added to Exhibit E. Exhibit C is a copy of five slides from a PowerPoint slide presentation prepared in the time period between February 18, 2002 and September 13, 2002. The first slide of these five slides is a cover page entitled "Unit 1799 Project Status and Construction." The remaining four slides

are plots illustrating actual progress and forecasted progress of the engineering and construction of a commercial-scale slurry polymerization process (the 1799 plant). *See* Exhibit C. In particular, these four plots depict the actual and forecasted progress versus time for procurement, engineering, construction, and overall project status of the 1799 plant. *See* Exhibit C. Exhibit D is a copy of one page from a project report of the 1799 plant. This one page has a table showing the planned and actual durations of activities related to the engineering and construction for the 1799 plant. *See* Exhibit D. Exhibit E is a construction drawing of the 1799 plant prepared prior to February 19, 2002, and showing an embodiment of the claimed subject matter, including a loop reactor 38 having at least one catalyst feed connection 40, two monomer feeds connections 42, and at least four continuous takeoff connections 44. *See* Exhibit D. The two monomer feed connections 42 and the four continuous takeoff connections 44 are depicted as arranged substantially symmetrical. *See* Exhibit D. Further, the illustrated continuous takeoff connections 44 are positioned on elbows 46 to facilitate withdrawal of an intermediate slurry or product slurry having a solids concentration higher than that of the fluid slurry circulating in the loop reactor 38 during operation of the loop reactor 38.

I declare further that all statements made herein are of my own knowledge, are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Dated: 24 June 2005 By: Donald W Verser

Donald W. Verser

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Business Address:	Kingwood Technology Center Chevron Phillips chemical Company 1862 Kingwood Dr. Kingwood, Texas 77339 USA

EXHIBIT A

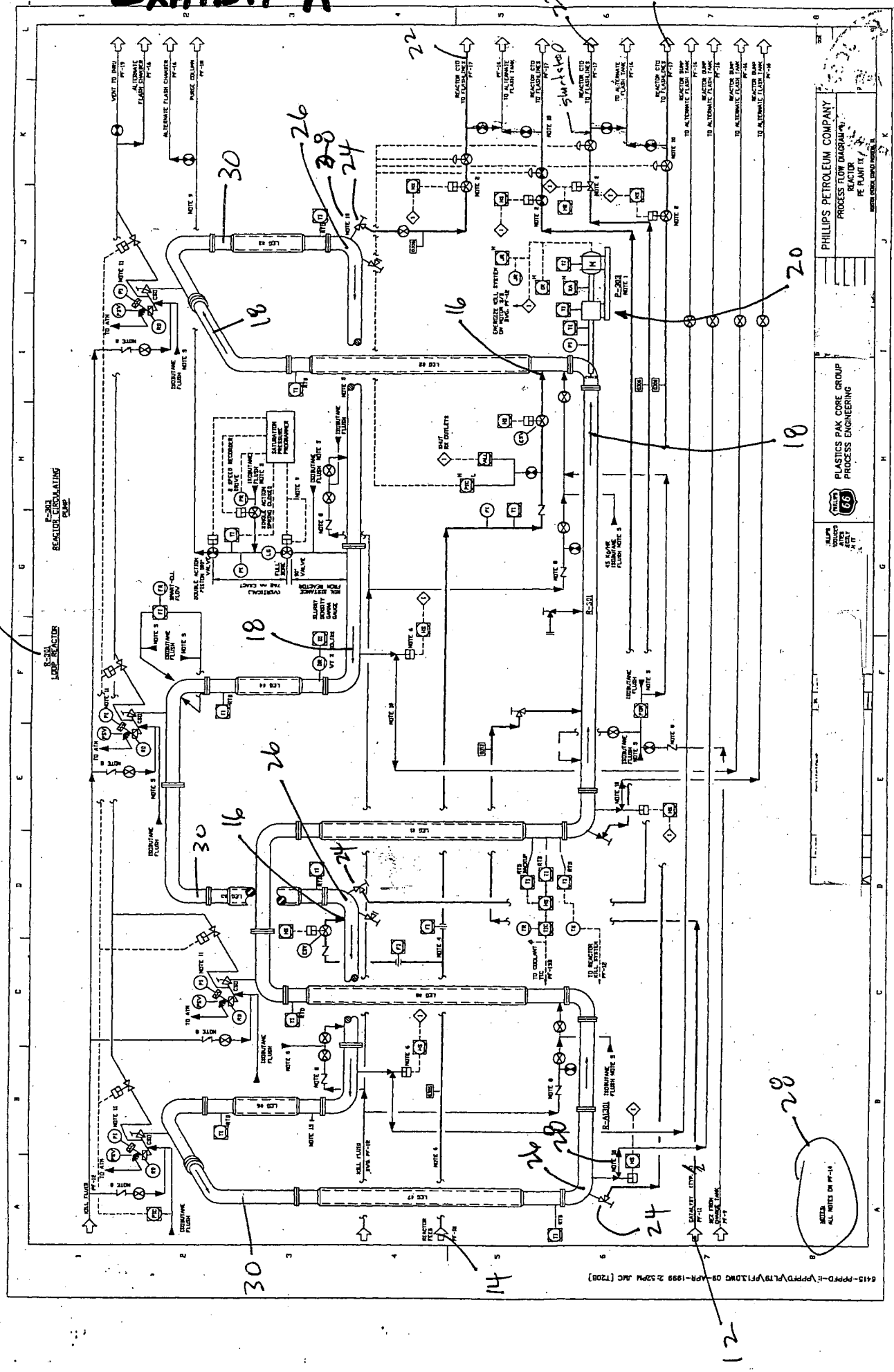
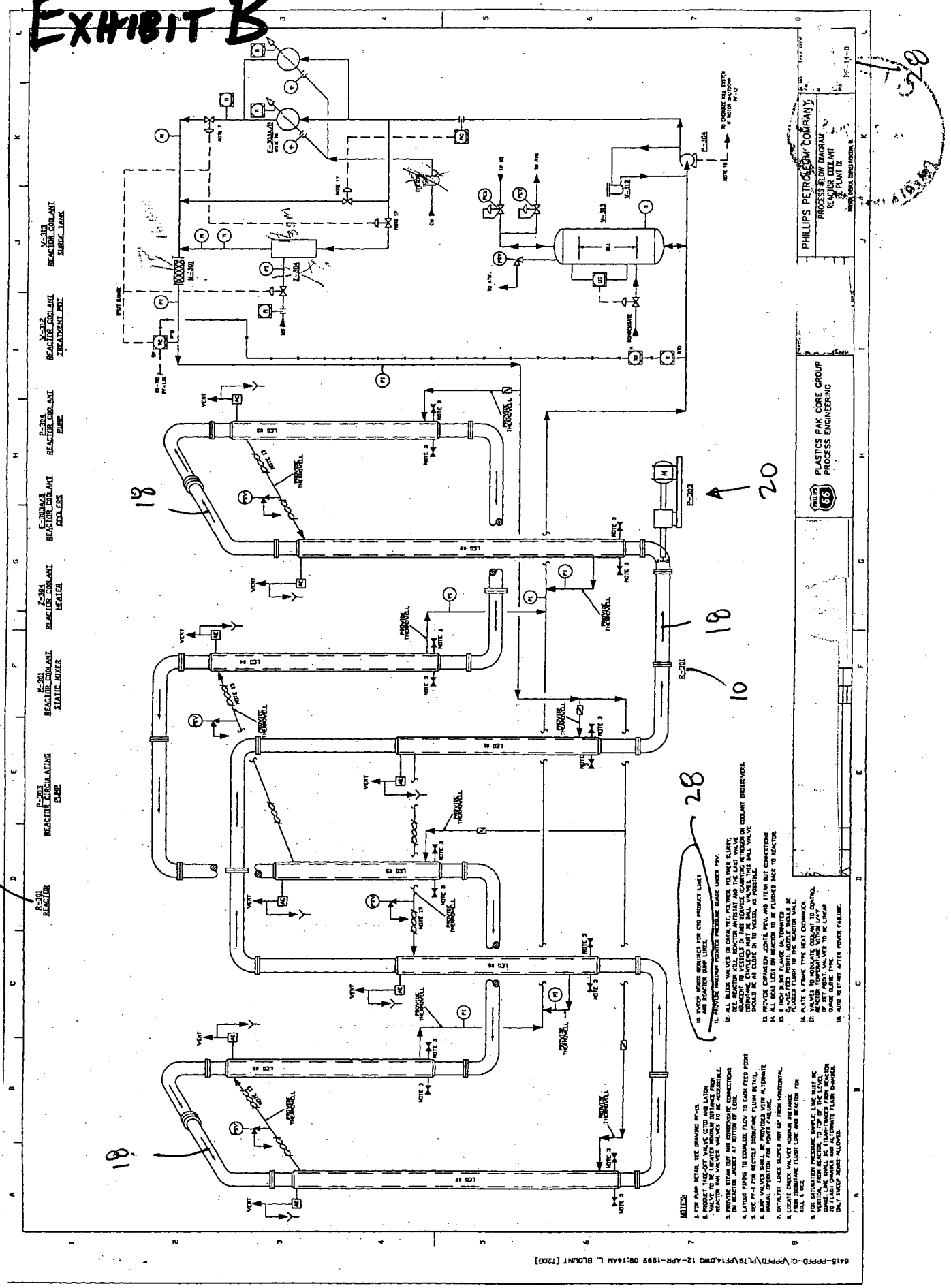
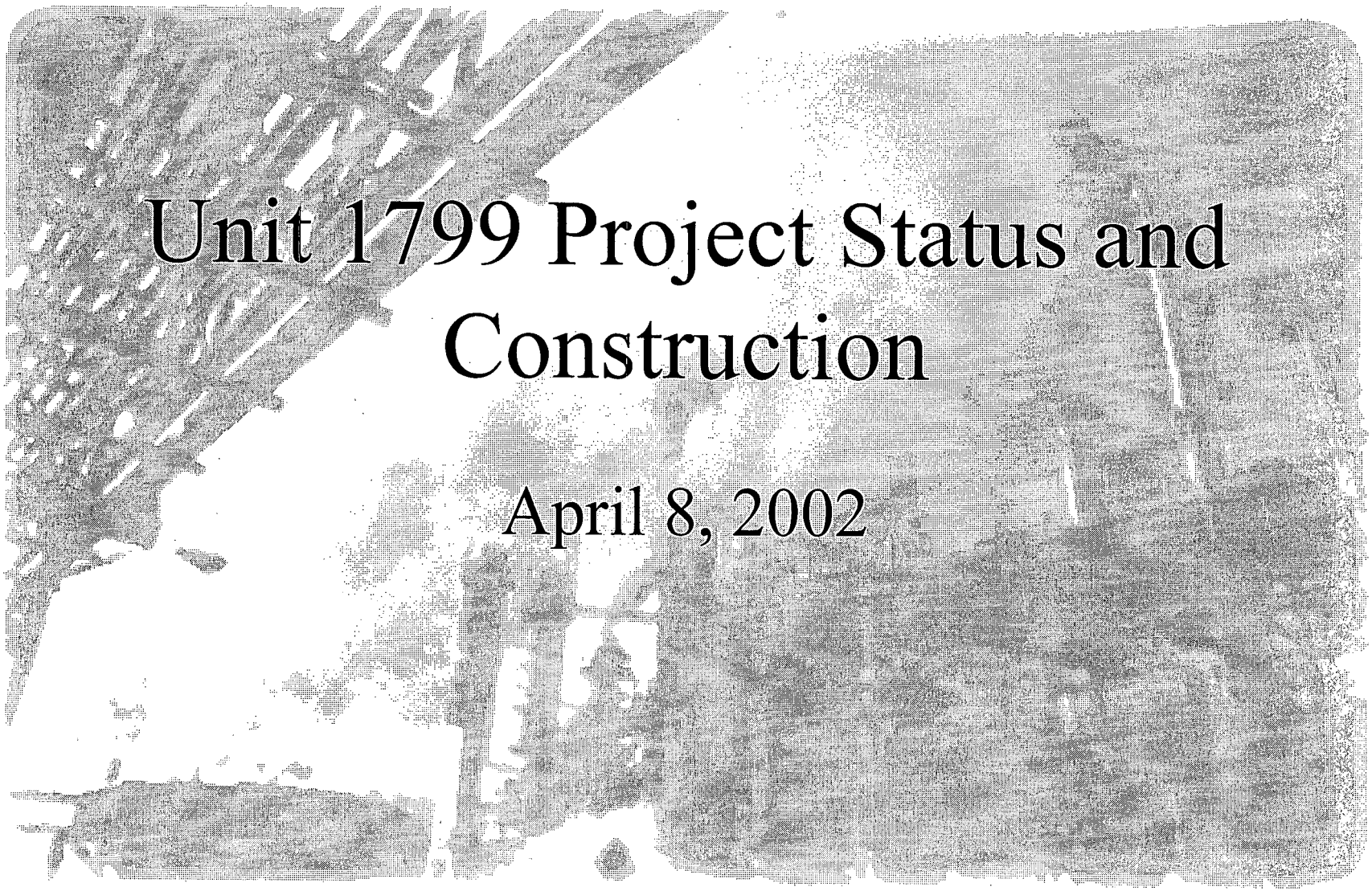

PHILLIPS PETROLEUM COMPANY
PROCESS FLOW DIAGRAM
REACTOR
PE PLANT IX
PLASTICS PAK CORE GROUP
PROCESS ENGINEERING
R-301
LOOP REACTOR
P-303
REACTOR CIRCULATING PUMP
10
16
18
20
22
24
26
28
30
12
14

EXHIBIT B


PHILLIPS PETROLEUM COMPANY
PLASTICS PAK CORE GROUP
PROCESS ENGINEERING
PROCESS FLOW DIAGRAM
REACTOR COOLANT
OF PLANT IX
R-301 REACTOR
P-303 REACTOR CIRCULATING PUMP
M-301 REACTOR COOLANT STATIC MIXER
E-304 REACTOR COOLANT HEATER
E-303A/B REACTOR COOLANT COOLERS
P-304 REACTOR COOLANT PUMP
V-312 REACTOR COOLANT TREATMENT POT
V-313 REACTOR COOLANT SURGE TANK
NOTES:
10
18
20
28
30

Chevron Phillips Chemical Company LP



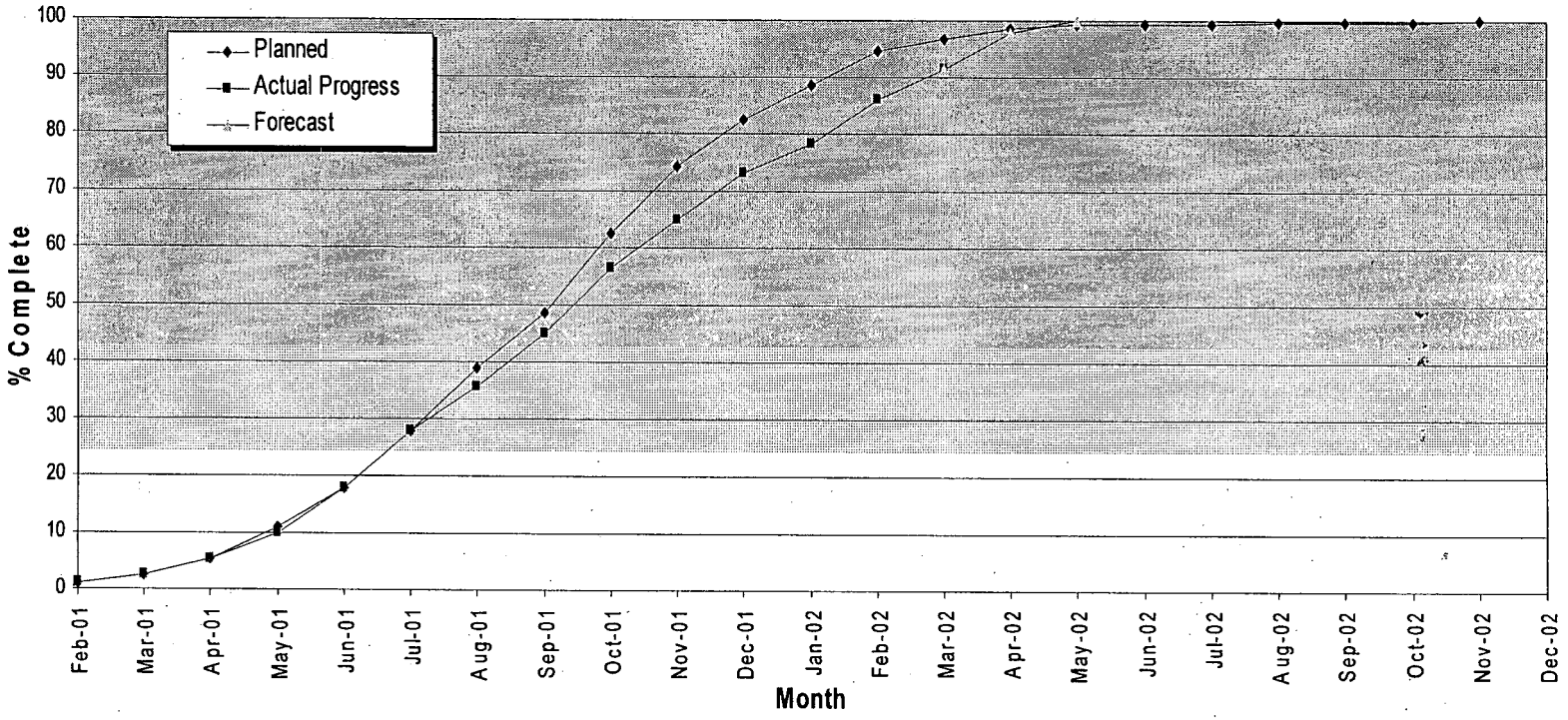
Unit 1799 Project Status and Construction

April 8, 2002

EXHIBIT C P1

HDPE UNIT 1799
CEDAR BAYOU PLANT
OVERALL PROGRESS CURVES - MARCH 2002

Engineering



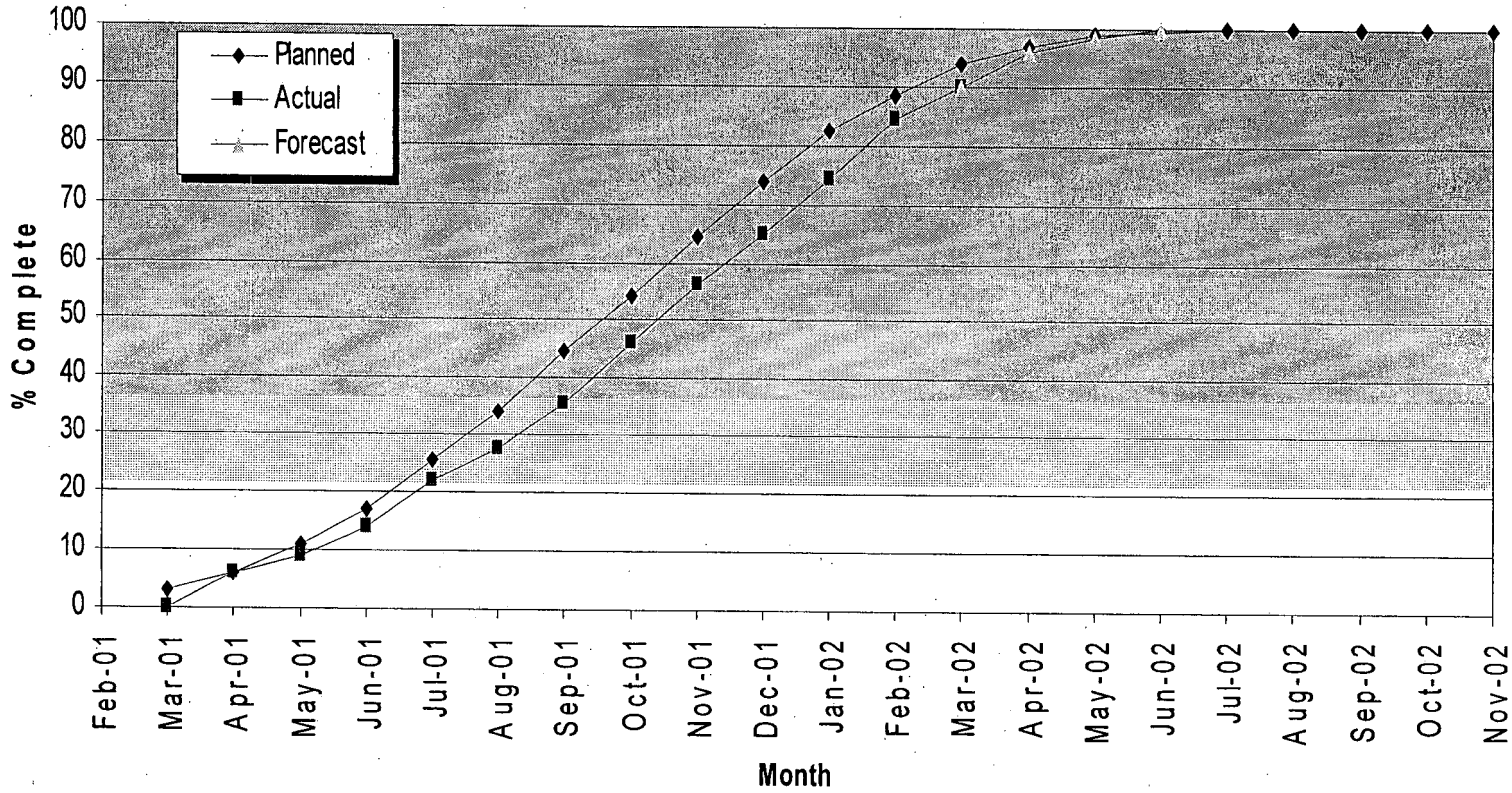
2001	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01
Planned	1.1	2.6	5.3	11.1	18	27.8	39.1	48.7	62.4	74.4	82.4
Actual Progress	1	2.5	5.3	10	18	27.7	35.8	45.0	56.5	65.1	73.2

2002	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02
Planned	88.7	94.7	96.8	98.4	99.2	99.2	99.2	99.7	99.7	99.7	100
Actual Progress	78.3	86.1	91.4								
Forecast	82.8	88.0	93.0	97.0	99.0	100.0					

EXHIBIT C P.2

HDPE UNIT 1799
CEDAR BAYOU PLANT
OVERALL PROGRESS CURVES - MARCH 2002

Procurement



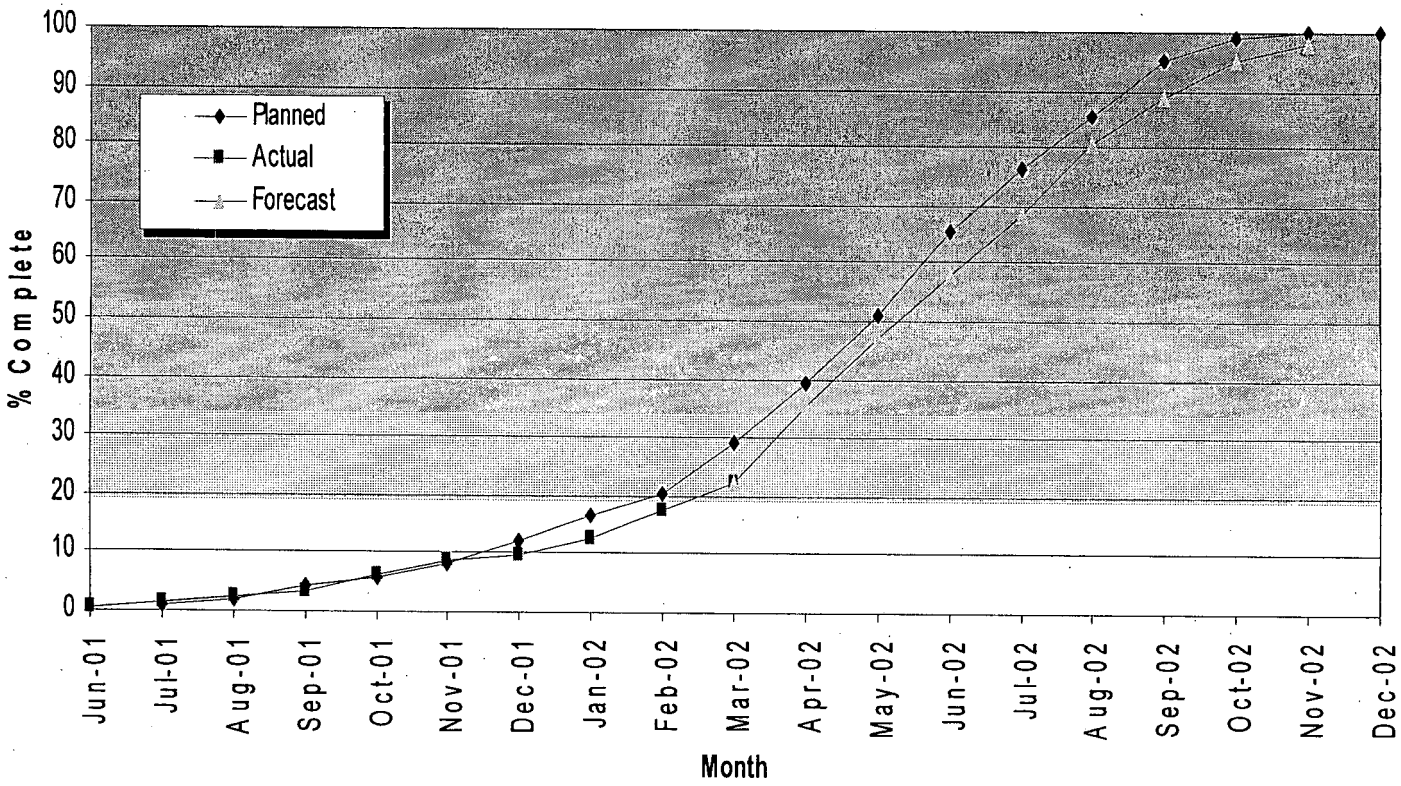
2001	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01
Planned		2.9	6.1	11.0	17.0	25.6	34.3	44.7	54.1	64.4	74.1
Actual		0.0	6.0	9.1	14.3	21.9	27.5	35.7	46.2	56.1	64.7

2002	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02
Planned	82.5	88.7	93.9	97.2	99.2	99.7	100.0	100.0	100.0	100.0	100.00
Actual	74.6	84.2	90.0	90.0							
Forecast	74.3	83.3	90.9	96.1	98.4	100.0					

EXHIBIT C P.3

HDPE UNIT 1799
CEDAR BAYOU PLANT
OVERALL PROGRESS CURVES - MARCH 2002

Construction



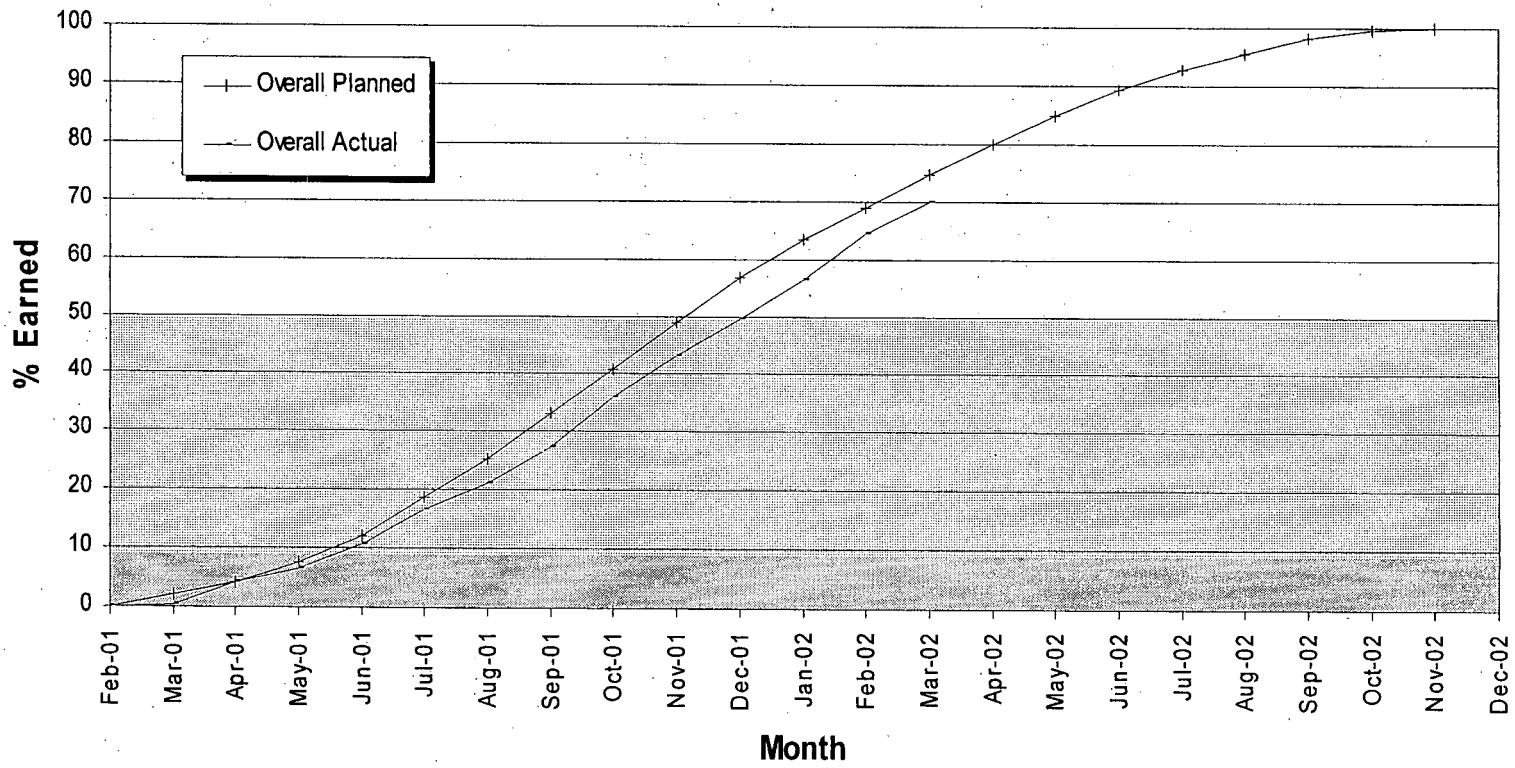
2001	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01
Planned		0.0	0.0	0.0	0.0	0.0	0.0
Actual	0.4	1.2	2.7	3.3	6.3	8.8	9.9

2002	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02
Planned	0.0	0.0	0.0	0.0	0.0	65.5	76.0	85.3	95.0	99.0	100.0	100.0
Actual	12.8	17.6	22.5									
Forecast			24.8	35.6	47.1	57.6	68.4	80.4	88.6	95.0	98.0	100.0

Exhibit C p. 4

HDPE UNIT 1799
CEDAR BAYOU PLANT
OVERALL PROGRESS CURVES - MARCH 2002

Project



2001-2002	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02
Eng Planned	1.1	2.6	5.3	11.1	18.0	27.8	39.1	48.7	62.4	74.4	82.4	88.7	94.7	96.8	98.4	99.2	99.2	99.2	99.7	99.7	99.7	100.0	
Eng Act	1.0	2.5	5.3	10.0	18.0	27.7	35.8	45.0	56.5	65.1	73.2	78.3	86.1	91.4									
Proc Planned		2.9	6.1	11.0	17.0	25.6	34.3	44.7	54.1	64.4	74.1	82.5	88.7	93.0	97.0	99.0	100.0	100.0	100.0	100.0	100.0	100.0	
Proc Actual		0.0	6.0	9.1	14.3	21.9	27.5	35.7	46.2	56.1	64.7	74.6	84.2	90.0									
Const Planned						1.0	2.1	4.2	5.8	8.2	12.2	16.5	20.1	29.3	39.4	50.9	65.5	76.0	85.3	95.0	99.0	100.0	
Const Actual					0.4	1.2	2.7	3.3	6.3	8.8	9.9	12.8	17.6	22.5									
Overall Planned	0.2	2.0	4.2	7.7	12.0	18.5	25.3	33.1	40.8	49.0	56.7	63.6	69.0	74.4	79.9	84.6	89.5	92.7	95.5	98.4	99.7	100.0	
Overall Actual	0.1	0.4	4.1	6.5	10.7	16.5	21.2	27.3	35.7	43.2	49.5	56.6	64.4	70.0									

EXHIBIT C P.5

EXHIBIT D

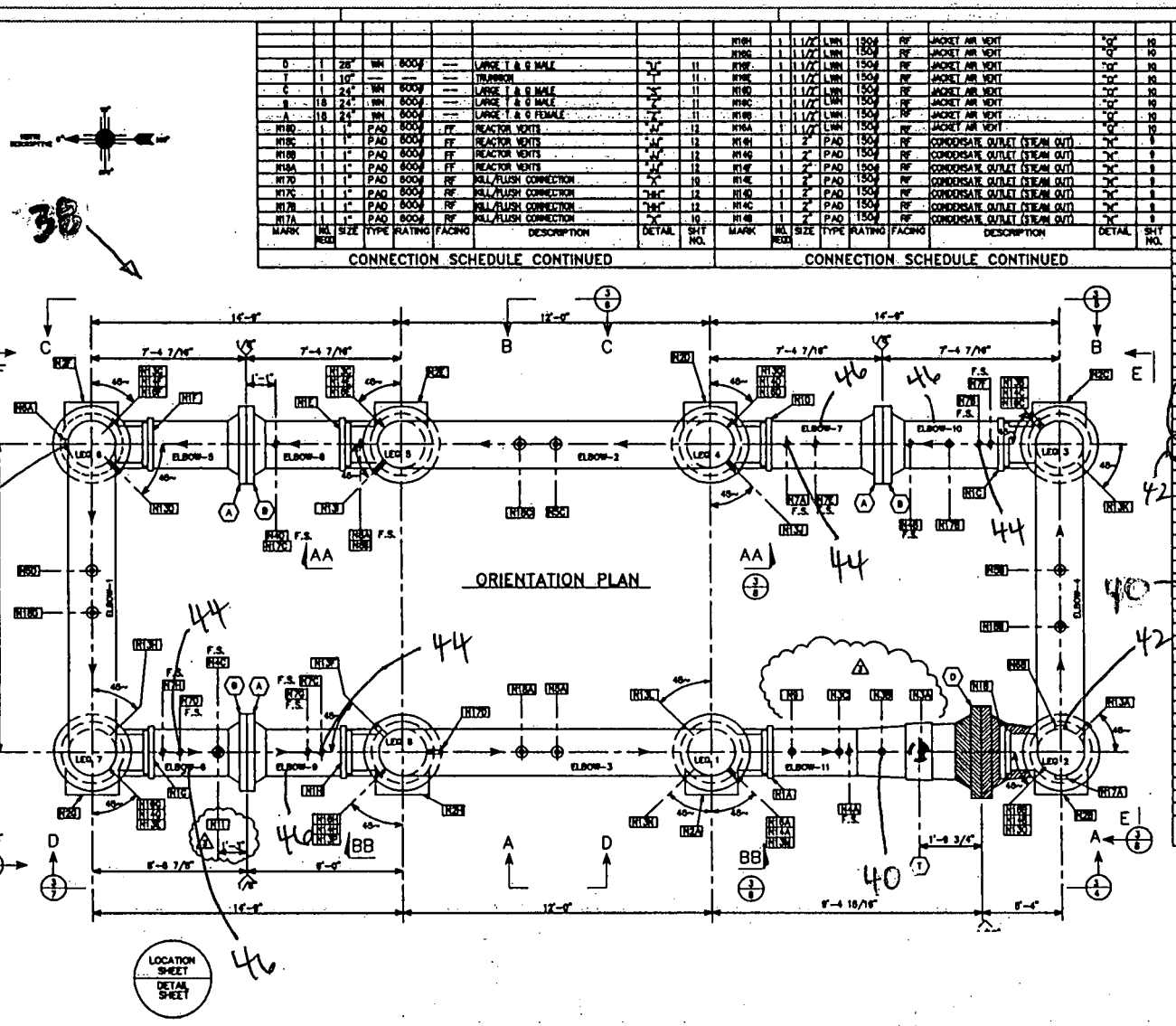
SCHEDULE DISTRIBUTION

Table 6 summarizes the durations of the schedule phases of the Unit 1799 Project. At authorization, the planned execution schedule was 22.9 months. The Unit 1799 Project team achieved a 25.9-month execution schedule. Technip/BE&K began detailed engineering in February 2001, 1 month later than planned. Detailed design was completed in June 2002, 2.5 months later than planned. Procurement of the extruder motor slipped several months late, but the slip did not significantly influence construction because other activities had already slipped. The team completed construction in March 2003. The project team achieved routine operation of the facility in June 2003.

Table 6
Schedule for the Unit 1799 Project

Project Phase	Planned			Actual		
	Start Date	End Date	Duration	Start Date	End Date	Duration
Project Definition	12 May 1999	2 Oct 2000	16.7 months	12 May 1999	2 Oct 2000	16.7 months
Authorization	1 Nov 2000	31 Dec 2000	2 months	11 Dec 2000	27 Feb 2001	2.5 months
Detailed Engineering	1 Jan 2001	26 Apr 2002	15.8 months	1 Feb 2001	15 Jun 2002	16.4 months
Procurement	15 Nov 2000	26 Apr 2002	17.4 months	15 Nov 2000	1 Nov 2002	23.5 months
Construction	15 Oct 2001	30 Nov 2002	13.5 months	15 Oct 2001	31 Mar 2003	17.5 months
Execution	1 Jan 2001	30 Nov 2002	22.9 months	1 Feb 2001	31 Mar 2003	25.9 months
Startup	1 Dec 2002	31 Jan 2003	2 months	1 Apr 2003	15 Jun 2003	2.5 months
Total Cycle Time	12 May 1999	31 Jan 2003	44.7 months	12 May 1999	15 Jun 2003	49.1 months

EXHIBIT E



MARK	NO. REQ'D	SIZE	TYPE	RATING	FACING	DESCRIPTION	DETAIL	SHT NO.
D	1	28"	WN	600#	—	LARGE 1 & 0 MALE	"D"	11
T	1	10"	—	—	—	TRUNNION	"T"	11
C	1	24"	WN	600#	—	LARGE 1 & 0 MALE	"C"	11
B	18	24"	WN	600#	—	LARGE 1 & 0 MALE	"B"	11
A	18	24"	WN	600#	—	LARGE 1 & 0 FEMALE	"A"	11
H18D	1	1"	PAD	600#	FF	REACTOR VENTS	"JJ"	12
H18C	1	1"	PAD	600#	FF	REACTOR VENTS	"JJ"	12
H18B	1	1"	PAD	600#	FF	REACTOR VENTS	"JJ"	12
H18A	1	1"	PAD	600#	FF	REACTOR VENTS	"JJ"	12
H17D	1	1"	PAD	600#	RF	ROLL/FLUSH CONNECTION	"JJ"	10
H17C	1	1"	PAD	600#	RF	ROLL/FLUSH CONNECTION	"JJ"	12
H17B	1	1"	PAD	600#	RF	ROLL/FLUSH CONNECTION	"JJ"	12
H17A	1	1"	PAD	600#	RF	ROLL/FLUSH CONNECTION	"JJ"	10

CONNECTION SCHEDULE CONTINUED

MARK	NO. REQ'D	SIZE	TYPE	RATING	FACING	DESCRIPTION	DETAIL	SHT NO.
H16H	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16G	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16F	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16E	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16D	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16C	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16B	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16A	1	1 1/2"	LWN	1500#	RF	JACKET AIR VENT	"Q"	10
H16H	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H16G	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H16F	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H16E	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H16D	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H16C	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H16B	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H16A	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9

CONNECTION SCHEDULE CONTINUED

MARK	NO. REQ'D	SIZE	TYPE	RATING	FACING	DESCRIPTION	DETAIL	SHT NO.
H14A	1	2"	PAD	1500#	RF	CONDENSATE OUTLET (STEAM OUT)	"N"	9
H13D	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13E	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13D	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13H	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13M	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13L	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H13K	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H13J	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H13J	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H13H	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H13G	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13F	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H13E	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13D	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H13C	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13B	1	1"	PAD	600#	RF	THERMOWELL CONNECTION	"GG"	11
H13A	1	1"	LWN	600#	RF	THERMOWELL CONNECTION	"F"	9
H11	1	1"	PAD	600#	FF	SATURATION PRESSURE CONN.	"F"	9
H9	1	1"	LWN	600#	RF	DEZ/FLUSH/PD TRANSMITTER	"F"	11
H8B	1	1"	LWN	600#	RF	ELBOW FLOWMETER	"F"	11
H8A	1	1"	LWN	600#	RF	ELBOW FLOWMETER	"F"	9
H7H	1	3"	PAD	600#	RF	FUTURE CTO CONNECTION W/ BLIND	"Y"	9
H7G	1	3"	PAD	600#	RF	FUTURE CTO CONNECTION W/ BLIND	"Y"	9
H7F	1	3"	PAD	600#	RF	FUTURE CTO CONNECTION W/ BLIND	"Y"	9
H7E	1	3"	PAD	600#	RF	FUTURE CTO CONNECTION W/ BLIND	"Y"	9
H7D	1	3"	PAD	600#	RF	CTO CONNECTION	"Y"	9
H7C	1	3"	PAD	600#	RF	CTO CONNECTION	"Y"	9
H7B	1	3"	PAD	600#	RF	CTO CONNECTION	"Y"	9
H7A	1	3"	PAD	600#	RF	CTO CONNECTION	"Y"	9
H6B	1	4"	PAD	600#	RF	REACTOR FEED	"E"	9
H6A	1	4"	PAD	600#	RF	REACTOR FEED	"E"	9
H5D	1	4"	PAD	600#	RF	RELIEF CONNECTION	"E"	10
H5C	1	4"	PAD	600#	RF	RELIEF CONNECTION	"E"	10
H5B	1	4"	PAD	600#	RF	RELIEF CONNECTION	"E"	10
H5A	1	4"	PAD	600#	RF	RELIEF CONNECTION	"E"	10
H4D	1	2 1/2"	PAD	600#	RF	DUMP CONNECTION	"D"	10
H4C	1	2 1/2"	PAD	600#	RF	DUMP CONNECTION	"D"	10
H4B	1	2 1/2"	PAD	600#	RF	DUMP CONNECTION	"D"	10
H4A	1	2 1/2"	PAD	600#	RF	DUMP CONNECTION	"D"	10
H3C	1	1"	PAD	600#	FF	CAT/FEED SPARE	"DD"	11
H3B	1	1"	PAD	600#	FF	CATALYST FEED	"DD"	11
H3A	1	1"	PAD	600#	FF	CATALYST FEED	"DD"	11
H2H	1	12"	PAD	150#	RF	JKT COOLING WATER OUTLET	"H"	10
H2G	1	12"	PAD	150#	RF	JKT COOLING WATER INLET	"H"	10
H2F	1	12"	PAD	150#	RF	JKT COOLING WATER OUTLET	"H"	10
H2E	1	12"	PAD	150#	RF	JKT COOLING WATER INLET	"H"	10
H2D	1	12"	PAD	150#	RF	JKT COOLING WATER OUTLET	"H"	10
H2C	1	12"	PAD	150#	RF	JKT COOLING WATER INLET	"H"	10
H2B	1	12"	PAD	150#	RF	JKT COOLING WATER OUTLET	"H"	10
H2A	1	12"	PAD	150#	RF	JKT COOLING WATER INLET	"H"	10
H1H	1	12"	WN	150#	RF	JKT COOLING WATER INLET	"H"	10
H1G	1	12"	WN	150#	RF	JKT COOLING WATER OUTLET	"H"	10
H1F	1	12"	WN	150#	RF	JKT COOLING WATER INLET	"H"	10
H1E	1	12"	WN	150#	RF	JKT COOLING WATER OUTLET	"H"	10
H1D	1	12"	WN	150#	RF	JKT COOLING WATER INLET	"H"	10
H1C	1	12"	WN	150#	RF	JKT COOLING WATER OUTLET	"H"	10
H1B	1	12"	WN	150#	RF	JKT COOLING WATER INLET	"H"	10
H1A	1	12"	WN	150#	RF	JKT COOLING WATER OUTLET	"H"	10

MARK	NO. REQ'D	SIZE	TYPE	RATING	FACING	DESCRIPTION	DETAIL	SHT NO.

CONNECTION SCHEDULE

EXHIBIT E